

CLAIMS

1. A communications system, the system comprising:
a plurality of nodes, each node having:
- 5 receiving means for receiving via an antenna
a signal transmitted by wireless transmitting
means;
transmitting means for wireless transmission
of a signal via an antenna; and,
10 means for determining if a signal received
by said node includes information for another
node and causing a signal including said
information to be transmitted by said
transmitting means to another node if said
15 received signal includes information for another
node;
- each node having one or more substantially
unidirectional point-to-point wireless transmission links,
at least some of the nodes having plural substantially
20 unidirectional point-to-point wireless transmission links
which share at least one of a receiver of the receiving
means and a transmitter of the transmitting means, each of
said links being to one other node only, at least some of
the nodes being the origination and termination point of
25 user traffic.
2. A system according to claim 1, wherein the nodes are
linked so as to form transmission path loops thereby to
provide plural choices of path for the transmission of a
30 signal between at least some of the nodes.
3. A system according to claim 2, wherein each loop
consists of an even number of links.
- 35 4. A system according to any of claim 1, wherein for each
node that has plural links to other nodes, each of said

plural links to another node is associated with a time slot.

5. A system according to claim 4, wherein each link for
5 each node is associated with a distinct time slot.

6. A system according to claim 4 or claim 5, wherein the
allocation of time slots to the links can be varied such
that a link may selectively be associated with more than
10 one time slot.

7. A system according to claim 1, wherein each node has a
direct line-of-sight link with at least one other node such
that each node can transmit a signal to another node in
15 line-of-sight with said each node.

8. A system according to claim 1, wherein each node
comprises means for transmitting a signal including said
information to another node if and only if a signal
20 received at said node includes information for another
node.

9. A system according to claim 1, wherein each node is
stationary.
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10. A system according to claim 1, wherein the number of
nodes is less than the number of links.

11. A system according to claim 1, wherein each node is
30 arranged to be in a transmission mode for a time period
which alternates with a time period for a reception mode.

12. A system according to claim 1, wherein at least one
node is arranged not to transmit to any other node
35 information in a signal received by said at least one node

when that information is addressed to said at least one node.

13. A system according to claim 12, wherein each node is
5 arranged not to transmit to any other node information in a signal received by said at least one node when that information is addressed to said at least one node.

10 14. A system according to claim 1, wherein each node has addressing means for adding to information in a received signal the address of a node to which a signal including said information is to be routed when said information is for another node.

15 15. A system according to claim 14, wherein the addressing means includes means for determining the route of information through the system and adding an appropriate address to the information accordingly.

20 16. A system according to claim 1, further comprising a central system controller for determining the route of information through the system.

25 17. A system according to claim 1, wherein at least one node has means for determining if a received signal includes information for said at least one node and processing means for processing information in a signal addressed to said at least one node.

30 18. A system according to claim 1, wherein the transmitting means of the nodes are arranged to transmit signals at frequencies greater than about 1 GHz.

35 19. A system according to claim 1, wherein the link between two nodes is arranged to use simultaneously two or more frequency channels.

20. A system according to claim 1, wherein said receiving and transmitting means are arranged to transmit and detect circularly polarised radiation.

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21. A system according to claim 1, wherein the transmitting means includes a highly directional transmitter antenna.

10 22. A system according to claim 1, wherein the receiving means includes a highly directional receiver antenna.

23. A system according to claim 1, wherein each node is substantially identical.

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24. A system according to claim 1, wherein the system is connected to a conventional trunk network for providing access to other networks.

20 25. A system according to claim 24, comprising a further node connected by a data connection to one of the nodes of the system and arranged to transfer a signal to or receive a signal from the trunk network or both.

25 26. A system according to claim 25, wherein a data storage server is connected to or provided at a node.

27. A system according to claim 1, wherein at least one link of a node is arranged to use a first transmission
30 frequency and at least one other link of said node is arranged to use a second transmission frequency.

28. A system according to claim 1, wherein some of the nodes are allocated to subscribers and some of the nodes
35 are not allocated to subscribers, at least some of said

non-allocated nodes being solely for carrying information traffic between subscriber nodes.

29. A method of communications across a network of nodes,
5 each node having one or more substantially unidirectional point-to-point wireless transmission links, at least some of the nodes having plural substantially unidirectional point-to-point wireless transmission links which share at least one of a receiver and a transmitter, each of said
10 links being to one other node only, the method comprising the steps of:

- (A) originating user data at one of the nodes;
- (B) transmitting a signal including said user data from said node to another node along a substantially
15 unidirectional point-to-point wireless transmission link between said nodes;
- (C) receiving said signal at said other node;
- (D) determining in said other node if the signal received by said other node includes user data for a
20 further node and transmitting a signal including said user data from said other node to a further node along a substantially unidirectional point-to-point wireless transmission link between said nodes if said received signal includes user data for a further node; and,
- 25 (E) repeating steps (B) to (D) until said user data reaches its destination node.

30. A method according to claim 29, wherein, for each node that has plural links to other nodes, each of said plural
30 links to another node is associated with a time slot, and each transmission step on a link of said one node occurs during a distinct time slot and each receiving step on a link of said other node occurs during a distinct time slot.

35 31. A method according to claim 30, comprising the step of varying the allocation of time slots to the links such that

a link is selectively associated with more than one time slot.

32. A method according to claim 29, wherein each node adds
5 to user data in a received signal the address of a node to which a signal including said user data is to be routed when said user data is for another node.

33. A method according to claim 29, wherein each node has
10 addressing means, the addressing means determining the route of the user data through the system and adding an appropriate address to the user data accordingly.

34. A method according to claim 29, wherein a central
15 system controller determines the route of user data through the system.

35. A method according to claim 29, comprising the step of
each node transmitting a signal including said user data to
20 another node if and only if a signal received at said node includes user data for another node.

36. A method according to claim 29, including the steps of
determining in at least one node if a received signal
25 includes user data for said at least one node and processing the user data in a signal addressed to said at least one node.

37. A method according to claim 29, wherein the signals
30 are transmitted at frequencies greater than about 1 GHz.

38. A method according to claim 29, wherein there are at
least two possible paths for transfer of data between a
source node and a destination node, and comprising the step
35 of transmitting a copy of said data on each of said at least two paths.

39. A method according to claim 29, wherein there are at least two possible paths for transfer of data between a source node and a destination node, and comprising the
- 5 steps of transmitting from the source node a part only of said data on each of said at least two paths and reconstructing the data from said transmitted parts of said data in the destination node.
- 10 40. A telecommunications switching device, comprising a communications system according to claim 1.

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